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Mr. Dickie is known to botanists as the discoverer, in conjunction with Mr. Templeton, of the rare northern *Carex rupestris* (Brit. Fl. ed. 4. p. 331) at the top of Glen Callader. We heartily wish he would publish a similar catalogue and with similar observations to the present, of the alpine vegetation of Aberdeenshire and the adjoining counties.

*Commentationes de Leguminosarum Generibus*. Auctore Georgio Bentham, Vienna.

This work exhibits great talent and great research, as may be expected from the well-known character of the author, and it is to be considered as the forerunner of a more elaborate publication on this extensive and difficult family. The tribes here discussed are *Podalyrieæ*, *Sophoreæ*, *Dalbergieæ*, and *Phaseoleæ*. Many new genera are given, and amended characters of previously established ones, and numerous species are described.

The same distinguished botanist is also engaged in a Monograph of the Linnæan genus *Erica* for the forthcoming volume of DeCandolle's Prodromus.

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## PROCEEDINGS OF LEARNED SOCIETIES.

### BOTANICAL SOCIETY OF EDINBURGH.

November 8th, 1838.—Professor Christison, V.P., in the Chair.

The President was directed to convey to Mr. Christy, in the most special manner, the thanks of the Society for his very splendid contributions to the Herbarium and Library.

1. Professor Graham read an account of a visit which he along with some friends had paid to the West of Ireland in August last, to examine its botanical productions. It was stated that the mountains of Cunnamara present very little of the alpine vegetation with

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2. Mr. Forbes exhibited specimens of the true *Primula elatior,* of Jacquin, gathered by him during the summer on the mountains of Styria. He pointed out the distinctions between these and the British specimens, and remarked that they confirmed the views he had formerly laid before the Society, in which he maintained that no true *Primula elatior* has hitherto been found in Britain. He also laid before the Society some specimens of *Viola pinnata,* from Mount Nanas, in Carniola, in order to show that the form of the filamental appendages in that species indicates a passage from the true Violets to the Pansies.

3. Professor Graham stated that some months ago he had received from Dr. Christison a root of *Ipomœa Purga,* now believed to be the plant which yields the true Jalap of commerce, and that when cultivated in the stove it had grown freely and produced flowers. It is altogether a different plant from that previously in cultivation.

December 13th.—Prof. Graham, President, in the Chair.

1. Mr. Brand read a paper containing remarks on the Statistics of British Botany, intended to illustrate the plan proposed to be adopted in the formation of the Botanical Society's British Herbarium. Besides detailing very fully the plan which he formerly suggested for dividing Great Britain and Ireland into 42 districts or Floras, from each of which, specimens of all indigenous plants, with certain exceptions, should if possible be obtained for the Society's Herbarium, Mr. Brand exhibited a series of elaborate Tables, deduced from an examination of Mr. Watson's excellent work on the Geographical Distribution of British Plants, and showed how far, and in what respect,

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*angulosa*, and many other species peculiar to those rarely visited mountains.

3. Mr. Brand exhibited a specimen of *Carex leporina*, found by him in 1830, during an excursion to Braemar and the mountains of Aberdeenshire.

4. Mr. Thomas W. Morrison exhibited specimens of the following plants from Cumberland and Westmoreland :—*Epimedium alpinum*, Wastwater, Cumberland; *Impatiens noli-me-tangere*, Barron Wood, Westmoreland; *Rosa gracilis*, Whinlater, near Keswick; *Rosa cinnamomea*, Portinscale, near Keswick.

The Society then proceeded to the election of Office-Bearers for 1839, when the following gentlemen were elected :—

*President.*

Robert Graham, M.D., F.R.S.E., F.L.S., Hon. M.R.I.A., Regius Professor of Botany in the University of Edinburgh.

*Vice-Presidents.*

David Falconar, Esq. of Carlowrie.
Robert Christison, M.D., F.R.S.E., Pres. R.C.P.E.
Robt. Kaye Greville, Esq., L.L.D., F.R.S.E., F.L.S.
David Steuart, Esq.

*Councillors.*

William M‘Nab, Esq., A.L.S.
W. F. Lindsay Carnegie, Esq. of Boysack.
Patrick Neill, Esq., LL.D., F.R.S.E., F.L.S.
Edward R. Roberts, Esq.
R. Wilbraham Falconer, Esq., Pres. Roy. Med. Soc.
Thomas Blizard Bell, Esq.

*Treasurer:* William Brand, Esq., W.S.—*Secretary:* William Hunter Campbell, Esq.—*Foreign Secretaries:* Edward Forbes, Esq., Pres. Roy. Phys. Society; John Hutton Balfour, M.D., F.R.S.E., F.R.C.S.E.—*Curator:* John Hutton Pollexfen, M.D.—*Assistant Curator:* August Aemil Kellerman.—*Artist:* James M‘Nab, Esq.

January 10th, 1839.—Professor Graham, President, in the Chair.

A letter to the President was read, from His Excellency the Minister Resident and Plenipotentiary of the King of Saxony, intimating that His Majesty had been graciously pleased to acquiesce in the proposal of the Society to elect His Majesty a Foreign Honorary Member.

It was resolved that on the occasion of so exalted a personage joining the Society, that the usual mode of election by ballot should be dispensed with; His Majesty Frederick Augustus, King of Saxony, was accordingly elected a Foreign Honorary Member by unanimous acclamation.

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*Councillors.*

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1. Mr. Giraud read the second part of his paper on the Structure and Functions of Pollen. In the former part of this paper, after describing the phænomena which are attendant on the development of pollen in various tribes of plants, Mr. Giraud pointed out some peculiarities which he had met with in the external configuration and internal structure of the mature pollen grain, and showed that from the former character no correct indications could be deduced for determining the limits of certain groups of plants; as the figure and surface of the pollen-grain often differs widely even in individuals of the same genus. The existence of a *third* tunic, or investing membrane, was shown to occur in the pollen of *Crocus vernus,* and also the presence of minute opaque bodies on the surface of the pollen of *Polemonium cœruleum,* which, when immersed in water, appeared to be possessed of spontaneous motion. The true nature of the furrow which exists in certain spherical and elliptical pollen grains, was pointed out, and shown not to be a slit in the outer membrane, as is the opinion of some vegetable anatomists.

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The functions of pollen were then noticed, and the phænomena which are attendant on the performance of those functions, from the period when the pollen leaves the anther till its tubes arrive at the base of the nucleus of the ovule. It was shown that a somewhat elevated temperature is in many cases necessary for the development of the pollen tubes, and that this condition is supplied by the evolution of caloric attendant on æstivation; and lastly, the various provisions, which exist for the preservation of the pollen from the deleterious effects of moisture, were pointed out.

2. Notes on *Lychnis dioica*, Linn., with reference to the occurrence of the varieties *vespertina*, *intermedia* and *diurna*, and some anomalous forms of these observed in the neighbourhood of Dundee. By Mr. Wm. Gardiner, Jun., Dundee. Communicated by Mr. Campbell.

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## WERNERIAN NATURAL HISTORY SOCIETY.

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Dr. Robert Paterson read a Memoir, Observations on the Artesian Wells of Clackmananshire, and their connection with the doctrine of Central Heat. As this paper does not refer directly to zoology or botany we shall not dwell upon it.

A paper on the Climate and Productions of Devonshire. By Dr. Chas. Goring, was then read.

Professor Jameson exhibited two rare Fishes found in the Pentland Frith and sent to the Natural History Museum by the Duchess Countess of Sutherland. He regarded them as *Labrus trimaculatus*, and the *Gadus minutus* or the *Poor*. A specimen of the *Ornithorhynchus* was exhibited, having the poison-duct and gland beautifully displayed; presented to the College Museum by Lord Glenelg. The carcass of a large Cinereous Eagle was also exhibited; being one of two birds of that kind which attacked a traveller the week before, near Newtown-Stuart in Galloway.

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Dr. Trail exhibited a specimen of Bergmehl from the North of Sweden, communicated to him by Mr. Laing. The Doctor had submitted it to analysis, and found it to be composed of the minute shields of infusoria, about one thousandth part of an inch in size, consisting chiefly of siliceous earth and alumina. Professor Jameson exhibited a very fine specimen of flexible sandstone from the Himalaya Mountains, transmitted from India by Dr. Robert Stevenson.

February 9.—John Sligo, Esq., in the Chair.

A paper by Dr. Chas. R. Goring was read, on the Comparative Merits of the Reflecting Microscope of Sir D. Brewster, and the Catadioptric Engiscope of Prof. Amici of Modena, with an account of a new Reflecting Telescope for Terrestrial Objects. On this paper we will not dilate, as not bearing directly on the subject of our work. Dr. Goring is of the opinion, that however admirable Sir David's microscope may be in theory, it will not answer in practice.

A communication was then read, on the Geology of Greece and the Greek Islands, illustrated with numerous specimens.

Professor Wallace then explained by a model and diagram his solution of the Miner's Problem, in reference to the depths of different strata, &c.

February 23.—Dr. Thomas Stewart Traill in the Chair.

Mr. Edward Forbes laid before the meeting a communication on the *Asteriadæ* of the Irish Sea, illustrated by the exhibition of specimens. In his arrangement he chiefly followed the one recently proposed by Professor Agassiz, occasionally modifying it, and introducing a few new genera and species. As this valuable and original paper will appear in the forthcoming number of the Society's Transactions, we need not enter further into particulars*. Professor Jameson then exhibited a fine specimen of the Beaumaris Shark, taken off the coast of Aberdeenshire. The characters which distinguish it from the Porbeagle Shark were dwelt upon.

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A paper by Dr. Chas. R. Goring was read, on the Comparative Merits of the Reflecting Microscope of Sir D. Brewster, and the Catadioptric Engiscope of Prof. Amici of Modena, with an account of a new Reflecting Telescope for Terrestrial Objects. On this paper we will not dilate, as not bearing directly on the subject of our work. Dr. Goring is of the opinion, that however admirable Sir David's microscope may be in theory, it will not answer in practice.

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Professor Wallace then explained by a model and diagram his solution of the Miner's Problem, in reference to the depths of different strata, &c.

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## ZOOLOGICAL SOCIETY.

June 12, 1838.—The Rev. F. W. Hope in the Chair.

Mr. Owen communicated to the Meeting another portion of the results attending his examination of the body of the *Apteryx*, embracing a description of the parts connected with the function of respiration, and their general relations, as shown in this extraordinary bird, to that structure of the respiratory organs which is so eminently characteristic of the entire class.

Mr. Owen remarks, that the system of respiration in birds is so obviously framed with especial reference to the faculty of aërial progression, and the peculiarities in the former exhibit so marked a physiological relation to the latter, that in the *Apteryx*, where the wings are reduced to the lowest known rudimentary condition, the examination of the accompanying modifications in the respiratory apparatus presented a most interesting subject for inquiry.

Upon carefully removing the *viscera* from the abdomen, Mr. Owen was both gratified and surprised at finding no trace of air-cells in the abdominal cavity; the *diaphragm* being entire, and pierced only for the transmission of the *œsophagus* and larger blood-vessels, as in the *Mammalia*.

The position of the *diaphragm* was almost horizontal, like that of the *Dugong*, differing from it principally in relation to the heart and *pericardium*, which projected into the abdominal cavity, as through a hernial aperture, the *aponeurosis* of the *diaphragm* being continuous over the *pericardium*; an approach towards the oviparous type in the disposition of the *viscera* being thus preserved.

In the origins of the *diaphragm* Mr. Owen found the *crura* of the lesser muscle exhibiting a greater degree of development than is known to exist in any other bird; the *crura* were entirely tendinous, and arose from slight projections at the sides of the last costal *vertebræ*, their fibres expanding and being lost in the large aponeurotic centre; at the point of their expansion to join the *aponeurosis* a small proportion of muscular fibre was observed.

The abdominal surface of the *diaphragm*, as in the *Mammalia*, was principally in contact with the convex surface of the liver, but the thoracic surface of the former was separated from the lungs by a series of small but well-marked air-cells, one of which projected slightly through the anterior aperture of the thoracic-abdominal cavity at the base of the neck; the *Apteryx* thus still retains the ornithic type of structure, although presenting us with the only known instance, in the feathered race, of a species in which the receptacular portion of the lungs is not extended into the *abdomen*.

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In the simplicity of its structure the *trachea* resembled that of the struthious birds, but there was no trace of a dilated membranous pouch as in the Emeu. The *trachea* consisted of 120 small rings, becoming gradually smaller to the last 20, and alternately overlapping and being overlapped at the sides, during the relaxation of the tube.

Mr. Owen remarks that the fixed condition of the lungs, and the existence of air-cells between the lungs and the *diaphragm*, clearly prove that inspiration cannot be effectually performed by the action of the *diaphragm* alone, but that it takes place in the *Apteryx* as in other birds, by the *sternum* being depressed, and the angle between the vertebral and sternal ribs being increased.

A communication was then read to the Meeting by Dr. Cantor, entitled, "A notice of the *Hamadryas*, a genus of Hooded Serpents with poisonous fangs and maxillary teeth."

Dr. Cantor commences with observing, that "since Dr. Russell embodied the results of his investigations in his unequalled work upon Indian Serpents, the attention which this branch of Indian zoology has received has been chiefly confined to occasional discoveries of *single* species; and yet from experience I have been convinced how rich this branch is, and how much still is left to be illustrated, not only with regard to species, but also with regard to the habits and the geographical distribution of this order of reptiles, the number and variety of which forms so prominent a feature in the zoology of Southern Asia.

"The venomous serpent, to which I shall here call attention, is the type of a new genus; which, from its inhabiting hollow trees and frequenting the branches, I propose to call *Hamadryas*. Its characters induce me to assign it a place between the genera *Naja*, Laurenti, and *Bungarus*, Daudin, which two forms it will be found to connect together.

### HAMADRYAS.

*Caput* latum, subovatum, deplanatum, *rostro* brevi obtuso, *scutis* quindecim superne tectum.

*Buccæ* tumidæ.

*Oculi* magni prominentes, *pupillâ* rotundâ.

*Nares* latè apertæ, duorum scutorum in confinio.

*Oris rictus* peramplus, subundatus.

*Tela* antica, pone qua dentes maxillares.

*Collum* dilatabile.

*Corpus* crassum, teres, *squamis* lævibus, per series obliquas dispositis, imbricatim tectum.

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HAMADRYAS OPHIOPHAGUS. *Ham. supernè olivaceo-viridis, striis sagittalibus nigris cinctus, abdomine glauco, nigro marmorato.*

*Scuta* abdominalia a 215 ad 245
*Scuta* subcaudalia a 13 ad 32
*Scutella* subcaudalia a 63 ad 71

*Hab.* Bengal.

Hindustanee name, 'Sunkr-Choar.'

"For the description and anatomical details, I beg to refer to my provisional description, published in the Asiatic Researches, vol. xx. p. 87., while I shall here confine myself to some general remarks upon the habits, the effects of the poison, and the history of this serpent.

"The *Hamadryas*, like the *Bungarus, Hydrus*, and *Hydrophis*, has a few maxillary teeth behind the poison-fangs, and thus like the latter connects the venomous serpents with isolated poison-fangs to the harmless, which possess a complete row of maxillary teeth.

"Of the terrestrial venomous serpents the *Bungarus* is chiefly characterized by a distribution of the teeth similar to that of the *Hamadryas*, which, also partaking of the chief characteristic of the genus *Naja*, viz. that of forming a hood or disc, constitutes an immediate link between the genera *Bungarus* and *Naja*.

"In consequence of the strong resemblance in the general appearance between the *Naja* and the *Hamadryas*, when first my attention became attracted to the latter, I thought I could refer this serpent to that genus; and it was not until I was able to examine a specimen whose poison-fangs were untouched (those of the first specimens I saw having been drawn by the natives, who are greatly afraid of this serpent), that I discovered the maxillary teeth behind the poison-fangs.

"*Hamadryas ophiophagus* differs from the *Naja tripudians*:

1. By its maxillary teeth.
2. By the strongly developed spines on the *os occipitale inferius*.
3. By the integuments covering the head.
4. By the integuments covering the abdominal surface of the tail.
5. By its colour.
6. By its size.

"According to the natives the *Hamadryas* feeds chiefly upon other serpents; in one I dissected I found remains of a good-sized *Monitor*, which fact may account for its arboreal habits, as I have in Bengal, along the banks of the rivers, observed numbers of those large lizards among the branches of trees watching for birds.

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"According to the natives the *Hamadryas* feeds chiefly upon other serpents; in one I dissected I found remains of a good-sized *Monitor*, which fact may account for its arboreal habits, as I have in Bengal, along the banks of the rivers, observed numbers of those large lizards among the branches of trees watching for birds.

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HAMADRYAS OPHIOPHAGUS. *Ham. supernè olivaceo-viridis, striis sagittalibus nigris cinctus, abdomine glauco, nigro marmorato.*

*Scuta* abdominalia a 215 ad 245
*Scuta* subcaudalia a 13 ad 32
*Scutella* subcaudalia a 63 ad 71

*Hab.* Bengal.

Hindustanee name, ' Sunkr-Choar.'

" For the description and anatomical details, I beg to refer to my provisional description, published in the Asiatic Researches, vol. xx. p. 87., while I shall here confine myself to some general remarks upon the habits, the effects of the poison, and the history of this serpent.

" The *Hamadryas*, like the *Bungarus*, *Hydrus*, and *Hydrophis*, has a few maxillary teeth behind the poison-fangs, and thus like the latter connects the venomous serpents with isolated poison-fangs to the harmless, which possess a complete row of maxillary teeth.

" Of the terrestrial venomous serpents the *Bungarus* is chiefly characterized by a distribution of the teeth similar to that of the *Hamadryas*, which, also partaking of the chief characteristic of the genus *Naja*, viz. that of forming a hood or disc, constitutes an immediate link between the genera *Bungarus* and *Naja*.

" In consequence of the strong resemblance in the general appearance between the *Naja* and the *Hamadryas*, when first my attention became attracted to the latter, I thought I could refer this serpent to that genus; and it was not until I was able to examine a specimen whose poison-fangs were untouched (those of the first specimens I saw having been drawn by the natives, who are greatly afraid of this serpent), that I discovered the maxillary teeth behind the poison-fangs.

" *Hamadryas ophiophagus* differs from the *Naja tripudians*:

1. By its maxillary teeth.
2. By the strongly developed spines on the *os occipitale inferius*.
3. By the integuments covering the head.
4. By the integuments covering the abdominal surface of the tail.
5. By its colour.
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by this species; the most protracted starvation amounts to a period of about one month, while the *Vipera elegans*, the *Naja tripudians*, and the *Bungarus annularis*, have, without inconvenience, been confined in cages without any food for more than ten months. Two specimens of the *Hamadryas* in my possession were regularly fed by giving them a serpent, no matter whether venomous or not, every fortnight. As soon as this food is brought near, the serpent begins to hiss loudly, and expanding the hood rises two or three feet, and retaining this attitude as if to take a sure aim, watching the movements of the prey, darts upon it in the same manner as the *Naja tripudians* does. When the victim is killed by poison, and by degrees swallowed, the act is followed by a lethargic state, lasting for about twelve hours. Such of the other Indian venomous serpents, the habits of which I have had opportunity to study from life, show themselves much inclined to avoid other serpents, however ready they are to attack men or animals, when provoked or driven by hunger; and I am not aware of any other of those serpents being recorded as preying upon its own kind. A short time ago, however, during my sojourn at the Cape of Good Hope, I received from high authority the following fact, which throws a light upon the habits of the *Naja* of southern Africa, one of which, when being captured, threw up the body of a *Vipera arietans* (*Vip. brachyurus*, Cuvier), which bore marks of having been submitted to the process of digestion.

"The *Hamadryas*, like the greater number of Indian serpents, evinces a great partiality to water; with the exception of the tree-serpents (*Leptophina*, Bell), they all not only drink, but also moisten the tongue, which, as this organ is not situated immediately in the cavity of the mouth, become in the serpents two different acts *. Specimens of this serpent in my possession changed the skin every third or fourth month, a process which takes place in all the Indian serpents several times during the year. The *Hamadryas* is very fierce, and is always ready not only to attack but to pursue when opposed; while the *Cophias*, the *Vipera*, the *Naja*, and the *Bungarus*, merely defend themselves, which done, they always retreat, provided no further provocation is offered. The natives of India assert, that in-

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June 26, 1838.—William Horton Lloyd, Esq., in the Chair.

A specimen of the Peregrine Falcon was upon the table, which had been sent to the Society's office as a donation to the Menagerie, with the following letter addressed to Mr. Rees, from the donor, Capt. Charles Robertson :—

"SIR,

"I BEG to present to you the accompanying Hawk, which was caught on board the ship Exmouth, on the 12th of February last, on her passage from Bengal to London, when in about latitude 12° north, and longitude 88°·30 east, which placed the ship about 300 miles from the Andaman Islands; and from observing the bird's tendency to fly away towards the east about the time of sunrise, for some days after it was caught, I am led to suppose that it must have been blown off, or followed its prey till out of sight of, those Islands. At the time that it was taken, it was in the act of devouring the remains of a sea bird on the main-topsail yard, which it had previously been seen to pounce down upon and take up from the sea.

"The injured leg was occasioned by a ring, to which it was attached when first caught, and the struggles of the bird to get away; but I have great hopes that it will regain in some measure the use of it by proper care and attention, which I was unable to give it; and it is now much improved to what it was, the two parts being more inclined to unite. I have fed it upon raw fresh meat, and young rats occasionally, but it never looks at water. When approaching the coast of England, it was very remarkable that the bird again struggled to get away in the direction of the land, although we were so far off as not to see it from the ship. I am not aware that this hawk differs from the common species, but the circumstances attending it may be interesting to a naturalist; and if it should be thought worthy of being added to your collection, I shall feel amply repaid for the trouble I have taken to preserve it.

"This is the second instance of a hawk being taken by me out of sight of land; and on the former occasion a sparrow took refuge in the cabin: we were at that time about 80 miles from Ceylon. From

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"This is the second instance of a hawk being taken by me out of sight of land; and on the former occasion a sparrow took refuge in the cabin: we were at that time about 80 miles from Ceylon. From

Mr. Yarrell called the attention of the Meeting to some specimens of fish presented by Mr. Harvey, of Teignmouth, whom he stated to be on the point of quitting England for a residence in Australia, and to whose zealous exertions as a Corresponding Member the Society had on many occasions been largely indebted.—A vote of thanks was proposed and carried unanimously.

June 26, 1838.—William Horton Lloyd, Esq., in the Chair.

A specimen of the Peregrine Falcon was upon the table, which had been sent to the Society's office as a donation to the Menagerie, with the following letter addressed to Mr. Rees, from the donor, Capt. Charles Robertson :—

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these circumstances it is evident that hawks traverse great spaces of the ocean, being able to feed on the wing.

"I remain, Sir, your obedient Servant,
"CHARLES ROBERTSON."

18, Alfred-place, Bedford-square,
26th June, 1838.

The first part of a paper was then read by Mr. Blyth, entitled "Outlines of a Systematic Arrangement of the class *Aves*."

July 10th, 1838.—Wm. Ogilby, Esq., in the Chair.

A letter dated Tymaen Pyle, Glamorganshire, May 14th, 1838, was read, addressed to the Secretary by J. E. Bicheno, Esq., accompanying a donation to the Museum of a skin of the Burrhal Sheep from the Himalaya Mountains. The animal being quite new to the collection had been set up by Mr. Gould, and was placed in the room for exhibition. Mr. Bicheno writes as follows:

"I found the accompanying skin in the possession of a neighbouring gentleman, who left India last year; and as I apprehend it to belong to a rare animal, and hardly known in this country, I have, with his permission, sent it to the Museum of the Zoological Society. It is not possible for me, at this distance from authorities, to make it out satisfactorily, but it seems very near to the Asiatic Argal (*Ovis Argala*), if not identical; if so, however, it varies in many particulars from the descriptions given of that species.

"It was killed, June 1st, 1836, by Thos. Smith, Esq., 15th Native Infantry; known in India as one of the most intrepid sportsmen and best shots in the country. He met with it in the Great Snowy Range close to the Barinda Pass, communicating with Chinese Tartary, near also to the famous peak called Jaurnootrie, under which rises the river Tamna. He estimates the height at which he found the animal to have been from 15,000 to 17,000 feet: Humboldt, he thinks, calls the Berinda Pass 18,000 feet high.

"The hill-men call it Burrhal, and considered this specimen to have been seven years old by the horns. The cry was that of a tame sheep. It was exceedingly shy, and no animal in Mr. Smith's opinion is so difficult of approach. During his expedition in pursuit of the Burrhal he killed also the Thaar, which he took to be a species of Goat, and the 'Serow,' an Antelope, which Mr. Hodgson has described in the Journal of the Asiatic Society, No. 45, for Sept. 1835. The Thaar is also described in the same paper, and is regarded by him to be an Antelope. Mr. Hodgson suspects the Burrhal to be his *Ovis Nahoor*, but I have no opportunity of consulting the work."

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"I was at last repaid by seeing nine of them at about 600 yards, and they saw us. I attempted to get near; but no! they are without exception the most difficult animals in the world to get near; and the air being so rarified I could hardly breathe, my Paharrees constantly falling and declaring they *would* die, and begging me to return.

"About four o'clock, as I was just giving it up in despair, I suddenly came round a peak of snow, and found the large Ram at about 300 yards looking at me: despairing of ever getting nearer, and knowing my rifle would do it if only held straight, I beat a place in the snow and laid it along, taking a steady aim, pulled, and to my delight saw him fall on his side and kick. He recovered himself and crawled into some frightful rock, and there stood showing me his horns."

The animal was not eventually captured until it had received a large number of balls. "Thus I killed," says Lieut. Smith, "the first Burrhal ever killed by European or native that I can learn."

Mr. Ogilby observed, that the present animal, although extremely rare and valuable, had been for some time known to naturalists, by a specimen in the collection of the Linnean Society, and by the researches of Mr. Hodgson, who had described two species of sheep inhabiting the Himalayan range. Recently, however, Mr. Hodgson had changed his opinion with respect to the existence of two distinct species, referring them both to his *Ovis Nahoor*; but Mr. Ogilby believed that another species did inhabit the Himalaya Mountains decidedly distinct from the present, and the horns of which are so capacious, that the young Foxes are said to nestle in such as are found unattached to the animals.

A paper was then read, entitled, "Observations on Marine Serpents." By Dr. Cantor.

This communication embodies the results of Dr. Cantor's observations upon the habits and general conformation of the Marine Ophidians, a group of *Vertebrata* to which but little attention has hitherto been given, from the circumstance of the danger attending their examination in the living state, and also from their geographical distribution being entirely confined to the tropical seas. The author being stationed, in the East India Company's service, on the Delta of the Ganges, had, during a considerable period, most favourable opportunities for studying these serpents, many of which were

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## GEOLOGICAL SOCIETY.

### *Award of the Wollaston Medal to Dr. Ehrenberg of Berlin;—Extracted from the President's Address.*

The Council have adjudged the Wollaston medal for the present year to Professor Ehrenberg, for his discoveries respecting fossil Infusoria and other microscopic objects contained in the materials of the earth's strata. We all recollect the astonishment with which, nearly three years ago, we received the assertion, that large masses of rock, and even whole strata, are composed of the remains of microscopic animals. This assertion, made at that time by Professor Ehrenberg, has now not only been fully confirmed and very greatly extended by him, but it has assumed the character of one of the most important and striking geological truths which have been brought to light in our time: for the connection of the present state of the earth with its condition at former periods of its history, a problem now always present to the mind of the philosophical geologist, receives new and unexpected illustration from these researches. Of about eighty species of fossil Infusoria which have been discovered in various strata, almost the half are species which still exist in the waters: and thus these forms of life, so long overlooked as invisible specks of brute matter, have a constancy and durability through the revolutions of the earth's surface which is denied to animals of a more conspicuous size and organization. Again, we are so accustomed to receive new confirmations of our well-established geological doctrines, that the occurrence of such an

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### *Award of the Wollaston Medal to Dr. Ehrenberg of Berlin;—Extracted from the President's Address.*

The Council have adjudged the Wollaston medal for the present year to Professor Ehrenberg, for his discoveries respecting fossil Infusoria and other microscopic objects contained in the materials of the earth's strata. We all recollect the astonishment with which, nearly three years ago, we received the assertion, that large masses of rock, and even whole strata, are composed of the remains of microscopic animals. This assertion, made at that time by Professor Ehrenberg, has now not only been fully confirmed and very greatly extended by him, but it has assumed the character of one of the most important and striking geological truths which have been brought to light in our time: for the connection of the present state of the earth with its condition at former periods of its history, a problem now always present to the mind of the philosophical geologist, receives new and unexpected illustration from these researches. Of about eighty species of fossil Infusoria which have been discovered in various strata, almost the half are species which still exist in the waters: and thus these forms of life, so long overlooked as invisible specks of brute matter, have a constancy and durability through the revolutions of the earth's surface which is denied to animals of a more conspicuous size and organization. Again, we are so accustomed to receive new confirmations of our well-established geological doctrines, that the occurrence of such an

event produces in us little surprise; but if this were not so, we could not avoid being struck with one feature of Prof. Ehrenberg's discoveries;—that while the microscopic contents of the more recent strata are all freshwater Infusoria, those of the chalk are bodies (*Peridineum, Xanthidium, Fucoides,*) which must, or at least can, live in the waters of the ocean. Nor has Prof. Ehrenberg been content with examining the rocks in which these objects occur. During the last two years he has been pursuing a highly interesting series of researches with the view of ascertaining in what manner these vast masses of minute animals can have been accumulated. And the result of his inquiries is*, that these creatures exist at present in such abundance, under favourable circumstances, that the difficulty disappears. In the Public Garden at Berlin he found that workmen were employed for several days in removing in wheelbarrows masses which consisted entirely of fossil Infusoria. He produced from the living animals, in masses so large as to be expressed in pounds, tripoli and polishing slate similar to the rocks from which he had originally obtained the remains of such animals; and he declares that a small rise in the price of tripoli would make it worth while to manufacture it from the living animals as an article of commerce. These results are only curious; but his speculations, founded upon these and similar facts, with respect to the formation of such rocks, for example, polishing slate, the siliceous paste called *kieselguhr,* and the layers of flint in chalk, are replete with geological instruction.

As the discoveries of Prof. Ehrenberg are thus full of interest for the geological speculator, so have they been the result, not of any fortunate chance, but of great attainments, knowledge, and labour. The author of them had made that most obscure and difficult portion of natural history, the infusorial animals, his study for many years; had travelled to the shores of the Mediterranean and the Red Sea in order to observe them; and had published (in conjunction with Prof. Müller) a work far eclipsing anything which had previously appeared upon the subject. It was in consequence of his being thus prepared, that when his attention was called to the subject of fossil Infusoria, (which was done in June, 1836, by M. Fischer) he was able to produce, not loose analogies and insecure conjectures, but a clear determination of many species, many of them already familiar to him, although hardly ever seen perhaps by any other eye. The animals (for he has proved them to be animals, and not, as others had deemed them, plants) consist, in the greater number of examples, of a staff-like siliceous case, with a number of transverse markings;

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and these cases appear in many instances to make up vast masses by mere accumulation without any change. Whole rocks are composed of these minute cuirasses of crystal heaped together. Prof. Ehrenberg himself has examined the microscopic products of fifteen localities, and is still employed in extending his researches; and we already see researches of the same kind undertaken by others, to such an extent, as to show us that this new path of investigation will exercise a powerful influence upon the pursuits of geologists. We are sure therefore that we have acted in a manner suitable to the wishes of the honoured Donor of the medal, and to the interests of the science which we all in common seek to promote, in assigning the Wollaston medal to Prof. Ehrenberg for these discoveries.

Although it is not necessary as a ground for this adjudication, it is only justice to Prof. Ehrenberg to remark, that his services to geology are not confined to the researches which I have mentioned. His observations, made in the Red Sea, upon the growth of corals, are of great value and interest; and he was one of the distinguished band of scientific explorers who accompanied Baron von Humboldt in his expedition to the Ural Mountains. And I may further add, that even since the Council adjudged this medal, Prof. Ehrenberg has announced to the Royal Academy of Sciences of Berlin new discoveries; particularly his observations on the organic structure of chalk; on the freshwater Infusoria found near Newcastle and Edinburgh, and on the marine animalcules observed near Dublin and Gravesend; and, what cannot but give rise to curious reflections, an account of *meteoric paper* which fell from the sky in Courland in 1686, and was found to be composed of Confervæ and Infusoria*.

## MISCELLANEOUS.

### A FEW PARTICULARS RESPECTING SOME RARE BIRDS WHICH HAVE LATELY OCCURRED IN THE VICINITY OF YARMOUTH.

Many varieties in ornithology having occurred in this neighbourhood since Messrs. Paget gave a list of them in their 'Sketch of the Natural History of Yarmouth,' it has been thought that the following notices respecting them might not be unacceptable.

A specimen of the honey buzzard was shot at Caistor, a village about two miles from hence, in the month of November 1837. From its size and the appearance of its plumage it was judged to be an immature female. This was not the only instance of its occurrence on our eastern coast during that season. A male bird was procured at

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